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The middle construction and the syntax-semantics interface*

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English and Dutch middle verbs have a grammatical subject that is the corresponding transitive verb's object. In this paper we will account for this fact by invoking the properties of a pre-syntactic level of semantic representation and its interplay with syntax proper. We will argue that the grammatical subject of a middle is its actual external argument, and we will propose a model of projection of arguments that allows for this. We will show that other special properties of middle constructions follow from the way the verb's logical subject is represented at the pre-syntactic level of representation. In particular, it will be shown that the Affectedness Condition on middle formation is not a condition on the type of argument that can appear as the middle verb's grammatical subject, but that its effects and some exceptions to it naturally follow from this representation. Our model will also allow an account of Dutch impersonal and 'adjunct' middles.

1. Introduction¹

Concerning the analysis of middle constructions in various languages, two types of analyses can roughly be distinguished. The first type accounts for the fact that the logical object becomes the grammatical subject in a middle by assuming there is NP-movement in syntax (comparable to what is assumed to happen in passives and unaccusative structures in standard GB-theory). The

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¹ A typographical note: we will use upper case to refer to levels of representation (LCS, D-structure). Lower case (lcs, d-structure) is used to refer to the representation of a particular phrase at a certain level. (So, a phrase has a certain lcs at LCS.)

second type, usually referred to as 'lexical' approaches,² do not involve NP-movement, but invoke some rule from which it follows that the logical object is the D-structure subject of the middle verb. In another paper (Ackema and Schoorlemmer 1993) we give some empirical evidence in favour of the latter type of approach (see also Fagan 1988, 1992). In this paper, we will work out a derivation for the middle construction in English and Dutch based on the interaction between a presyntactic level of representation where a predicate's conceptual structure is defined and syntax proper. We will show that such an analysis is not only an empirical necessity, but can also account for some problematic properties of middles without introducing too much extra machinery.

Our analysis will account for the effects of the Affectedness Constraint (Anderson 1977, Jaeggli 1986) on Middle Formation, which states that the promoted argument in a middle must somehow be 'affected' by the action expressed by the verb.

Also, we will show that it can derive two particular types of middles in Dutch, impersonal middles like (1a) and adjunct middles like (1b), which have been argued to be problematical for accounts that are not purely syntactic (Hoekstra and Roberts 1990: 2).

- (1a) Het loopt lekker op deze schoenen
it walks nicely on these shoes
- (1b) Deze schoenen lopen lekker.
these shoes walk nicely

These middles cannot be derived by a rule externalizing a designated argument (a rule of the kind first proposed by Williams 1981, and used by Roberts 1987 to externalize an argument of the middle verb). We will show below, however, that presyntactic accounts can involve more than externalizing designated arguments.

² We in fact think this an unhappy term for the type of analysis we have in mind. Our analysis assumes the existence of some presyntactic semantic level with its own rules and principles, from which d-structures are projected (we will specify this below). This level is not the lexicon, however. The lexicon is not a module of the computational system, like syntax, semantics, phonology and morphology (note that, though often confused, *lexical* does not mean *morphological* either), but a list mentioning all and only those properties of the elements of a language that are idiosyncratic (cf. Di Sciullo and Williams 1987: ch. 1). Thus, a notion like 'lexical rule', in our view, is a contradiction in terms. We will use the term 'presyntactic account' henceforth, as a more accurate term for the type of solution we have in mind.

After briefly reviewing a few of our reasons for not adopting a movement analysis in section 2, we will outline the model of grammar we assume in section 3. In section 4 we will show how we can accommodate the idea put forward in Fagan (1988, 1992) and others that the logical subject in a middle is semantically arbitrary and is not projected in syntax. Section 5 discusses the promotion of the logical object. We will show that problems encountered by Externalization rules can be avoided by assuming that there is no such thing as a designated external argument. Instead, an entire argument structure can be marked as containing an external argument. Following Grimshaw (1990) and Jackendoff (1990a), we assume that in a structure thus marked the most prominent argument, given a specific thematic hierarchy, will become external. In section 6 we will show how this approach accounts for the Affectedness Constraint. In fact, the analysis predicts the existence of certain middles that are exceptions to this constraint. Section 7 contains a brief discussion of double object verbs in relation to Middle Formation. In section 8 the analysis will be extended to Dutch impersonal and adjunct middles. Section 9 contains our conclusions.

2. The unergativity of middles

In this section we will review some empirical evidence that indicates that the grammatical subject in a middle (the logical object) is a D-structure subject, not a D-structure object. In other words, contrary to what is expected under analyses involving NP-movement, middles do not pattern with unaccusatives, but with unergatives.³

As pointed out by Perlmutter (1978) and many others, in some languages there is a correlation between unergativity/unaccusativity and auxiliary selection in the perfect tense. Unergatives typically take cognates of 'have', while unaccusatives typically take cognates of 'be'. Dutch is one of the languages showing this distinction. It turns out that middles consistently take *hebben* 'have'.

- (2a) Dit vlees heeft/*is altijd gemakkelijk gesneden.
 this meat has/is always easily cut
 (2b) Dit soort boeken heeft/*is altijd goed verkocht.
 this sort books has/is always well sold

³ This section contains material from Ackema and Schoorlemmer (1993), in which we argue more extensively against particular details of NP-movement analyses. There, we also discuss another property of some purely syntactic approaches, namely the fact that the logical subject is supposed to be syntactically present, as an empty PRO or pro argument.

Under the assumption that auxiliary selection is determined by whether or not the grammatical subject is a D-structure subject, this fact indicates the absence of NP-movement in middles. It has been argued that the choice of the auxiliary is determined by aspectual properties of the construction (cf. Van Valin 1990, Hoekstra and Mulder 1990, Zaenen 1992), but this is not unproblematic. As Everaert (1992) shows, there are light verb constructions that have precisely the same aspectual properties as their heavy verb counterparts, but still they differ in their choice of auxiliary. Example (3b) below contains an idiomatic verb with the same aspectual properties as its nonidiomatic near-synonym in (3a). The idiom takes 'be' despite these aspectual properties, since it has been formed from unaccusative *gaan* 'go'.

- (3a) Hij heeft de hele dag/*in een uur geschreeuwd van woede.
 he has all day/in an hour screamed of anger
 (3b) Hij is de hele dag/*in een uur tekeer gegaan.
 he is all day/in een uur 'tekeer' went
 'He has been raving all day/in an hour.'

Notice, furthermore, that any analysis that links aspectual properties and auxiliary selection has a hard time accounting for the behaviour of transitive verbs. These always select *hebben* 'have' irrespective of their aspectual properties. So, although maybe not decisive in themselves, the facts in (2) may be said to give a first indication of a middle verb's syntactic unergativity.

The second criterion to distinguish unergatives and unaccusatives in Dutch concerns the behaviour of past and present participles as prenominal modifiers. Unergative intransitives can appear prenominally only as a present participle.

- (4a) de dinerende taalkundigen / *de gedineerde taalkundigen
 the dining linguists the dined linguists
 (4b) een niet kloppende lijst / *een niet geklopte lijst
 a not tallying list a not tallied list
 (4c) een lijdende student / *een geleden student
 a suffering student a suffered student

Unaccusatives allow both the present and the past participle prenominally.

- (5a) de stervende zwaan / de gestorven zwaan
 the dying swan / the died swan

- (5b) de vallende bladeren / de gevallen bladeren
 the falling leaves the fallen leaves

It turns out that middles pattern with unergatives and not unaccusatives, by allowing the present participle prenominal, but resisting the past participle. Note that the present participle can be noneventive in Dutch, see (4b) and (4c), so that it is compatible with a generic middle reading.

- (6a) het makkelijk snijdende/ *gesneden vlees⁴
 the easily cutting cut meat
 (6b) de lekker lopende/ *gelopen schoenen⁵
 the nicely walking walked shoes

Again, we must ask ourselves whether these facts indicate the syntactic unergativity of the verb or whether they are caused by some other property like having telic or atelic aspect. By looking at the behaviour of transitive verbs in the same environment it can be shown that aspectual properties are irrelevant to this issue. (Needless to say, the behaviour of transitives should be governed by the same rules and principles that govern the behaviour of intransitives; therefore, transitives are just as crucial in finding out what underlies the distinction between unergatives and unaccusatives.) Almost all atelic transitives, like all telic ones, can occur as prenominal past participles, modifying their internal, but crucially not their external, argument. This shows that it is the internal/external argument distinction that matters in the possibility of prenominal past participle modification, not the aspect of the structure. See the examples in (7).

- (7a) de door zijn collega's al jaren gehate/bewonderde componist
 the by his colleagues for years hated/admired composer
 (7b) de door het gekuch voortdurend gehinderde dirigent
 the by coughing constantly hampered conductor
 (7c) de vaak gehoorde klacht
 the often heard complaint

⁴ Of course, *het makkelijk gesneden vlees* 'the easily cut meat' is grammatical as a passive of transitive *snijden* 'cut', but it does not have the middle reading.

⁵ This is an adjunct middle, cf. *deze schoenen lopen lekker* 'these shoes walk nicely' (= (1b)).

The fact that so many intransitive prenominal past participles are telic must be caused by the fact that, obviously, there is a correlation between telicity and being syntactically unaccusative, but it is the latter property and not the former that matters here. In fact, as with most correlations, there are exceptions. In (8) some atelic unaccusatives are given, which, as expected, do occur as prenominal past participle.

- (8a) De bezoekers zijn/*hebben urenlang gebleven.
the visitors are/have for-hours stayed
- (8a') de urenlang gebleven bezoekers
the for-hours stayed visitors
- (8b) De spanning is/*heeft dagenlang toegenomen.
the tension is/has for-days increased
- (8b') de dagenlang toegenomen spanning
the for-days increased tension
- (8c) De tegenzin is/*heeft jarenlang gegroeid.
the dislike is/has for-years grown
- (8c') de jarenlang gegroeide tegenzin
the for-years grown dislike

The middle verb's inability to occur as a prenominal past participle, shown in (6), therefore indicates its syntactic unergativity.

Finally, like unergatives, but unlike unaccusatives, middles do not allow Adjectival Passive Formation.⁶ This is shown in (9) and (10).

- (9a) De kinderen lijken gegroeid. (unaccusative)
the children look grown
- (9b) *De kinderen lijken gewerkt. (unergative)
the children look worked

⁶ Note that this is not the same argument as the one concerning the impossibility of prenominal past participles of unergatives. We believe the prenominal past participle is not equivalent to the adjectival past participle (compare Wasow 1977); both verbal and adjectival past participles occur prenominally in Dutch, as shown in (i).

- (ia) de al uren (on-)geopende deur (adjectival participle)
the for hours (un-)opened door
- (ib) de deur Piet (*on-)geopende deur (verbal participle)
the by Piet (*un-)opened door

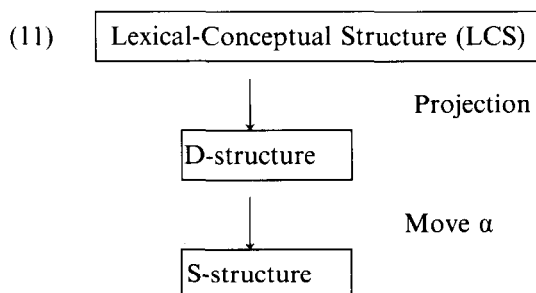
- (10a) *Dit vlees lijkt gemakkelijk gesneden. (cf. fn.4)
 this meat looks easily cut
 (10b) *Deze schoenen lijken lekker gelopen. (cf. fn.5)
 these shoes look nicely walked

Taken together, these criteria give a firm indication that middles are unergatives, as expected in nonmovement analyses. Therefore, we will present an analysis that derives middles at a presyntactic level. The next section will outline what kind of level.

3. Lexical Conceptual Structure and argument structure

In the previous section we have given an argument to show that a movement analysis of the middle construction is unable to account for some properties of middle sentences. In the remainder of the paper, we will argue that, instead, middles should be derived at a presyntactic level of representation. This section will be devoted to an outline of the properties of such a level.

The model of grammar we assume is based on Jackendoff (1990a) and Grimshaw (1990); it is partially represented in (11).



Arguments are projected to D-structure from a level of representation of the sentence's semantics called Lexical Conceptual Structure. Conceptual structures are built from semantic primitives in the way described in Jackendoff (1983, 1990a). The primitives are semantic predicates, taking arguments. Two kinds of semantic information are represented at two different tiers, a thematic tier and an action tier. First we will discuss the thematic tier.

A sentence like *John ran into the room* will be represented at the thematic tier as follows (Jackendoff 1990a: 45):

- (12) [_{EVENT} GO ([_{THING} JOHN]_A, [_{PATH} TO ([_{PLACE} IN ([_{THING} ROOM]_A)])])]

Some of the semantic arguments are marked as syntactic arguments, represented by a subscript A. As a shorthand to express the A-marked elements of LCS, we adopt Grimshaw's (1990) notation of a-structure. We want to emphasize, however, that we use this as a notational device only, not as a distinct level of representation that has operations affecting it. The a-structure shorthand corresponding to (12) thus encodes that this lcs projects two arguments (Theme and Location).

The thematic tier of LCS allows a structural definition of traditional theta-roles like Theme, Agent, Goal, etc. For instance, Agent can be defined as the first argument of a CAUSE function, Theme is the first argument of a movement function like GO or STAY, etc. Representations at the thematic tier, like (12), only include spatio-temporal information. The conceptual semantics of an expression can of course involve more than this alone. Next to spatio-temporal relations between arguments, the way arguments act upon each other is also expressed. That is why the lcs of a verb can also contain an action tier, which encodes the affectedness relations between arguments of a predicate. It uses a function AFFECT, like this:

- (13) AFF [A, B]

By definition, the first argument of this function is Actor, the second is Patient.⁷ The status of some semantic argument as an Actor or a Patient can be determined by testing whether the argument fits in the scheme 'what X did was ...' (X is Actor) or 'what happened to X was/what Y did to X was ...' (X is Patient). Note the distinction between Agent (thematic tier label) and Actor (action tier label), which in more traditional classifications would probably both fall under the Agent label (cf. Jackendoff 1990a: 128).

One and the same element may be an argument at both the thematic tier and the action tier. For instance, with respect to what we just said it may be

⁷ Jackendoff in fact distinguishes between two possible fillers of the second argument slot in the AFF-function, viz. Patient and Beneficiary, the difference being that the first is affected in a negative way by the action, while the second is affected in a positive way. We will use Patient as a cover term for both roles here.

noted that if there is an Agent, it will often also be the Actor. However, there is no fixed correspondence between an argument position at the action tier and an argument position at the thematic tier. It is an advantage of this model that it accounts in a straightforward way for the fact that an argument may be for instance Theme and Actor at the same time, as shown in (14).

(14) *John* went for a jog. (thematic tier: Theme; action tier: Actor)

Various combinations are possible.⁸ The action tier can of course contain only an Actor or only a Patient. In that case, either of the positions A or B in (13) is left open, as would be the case for B in (14). Note, finally, that some verbs do not have an action tier at all.

The A-marked elements in an lcs project according to the hierarchy among these elements. We adopt the following partial hierarchy (based on Jackendoff 1990a: 258):

(15) Actor–Patient–Agent–Theme–Goal

Action tier arguments are more prominent than thematic tier arguments. So, whatever the roles in the verb's lcs, it is the arguments of AFFECT that will be at the top of the verb's a-structure.

Crucially, being external is not a property of any individual designated argument. Instead, complete lcs's and their corresponding a-structures can be marked for projecting an external argument (we notate this as [+ext]).⁹ No single argument is intrinsically designated external. A verb like *kill*, for example, will have an a-structure representation like (16).

(16) kill (θ_{Actor} (θ_{Patient}))^{+ext}

We adopt Grimshaw's (1990) convention of representing the hierarchical relations by bracketing.

⁸ Elements that are semantic arguments at both tiers of course project to syntax only once. Jackendoff analyzes these cases as instances of argument binding at LCS. The verb's lcs contains both structural argument positions, but only one is assigned the A-feature. The other is coindexed with it, does not receive its own A-feature and cannot project as a distinct syntactic argument. Argument binding can also occur within one tier, which accounts for the fact that a syntactic argument may also be associated with more than one thematic role.

⁹ Although we notate it with a diacritic, this does not necessarily mean that [+ext] is an idiosyncratic property. It might be derivable from aspectual properties of the lcs in question (see e.g. Levin and Rappaport Hovav 1992; but cf. Reinhart 1991). We will not discuss this issue here.

4. Optionality of projection

We now come to the projection of arguments from LCS to D-structure. Some accounts of middles are motivated by the assumption that every semantic role of a verb obligatorily projects to D-structure, this being a more attractive option than the alternative position that some semantic roles must project in syntax, while others need not. There is a third option, however, equally straightforward: projection of semantic arguments to syntactic argument positions is never obligatory in principle. We will adopt this latter view.

Optional projection cannot be completely free, however. In fact, every semantic argument that has specific content must project, as shown by the trivial observation that a sentence like (17) cannot mean 'John steals expensive Swiss watches for a living'.

(17) John steals for a living.

What we need is a restriction that is akin to the classical Recoverability Condition (cf. Chomsky 1964), though not as a condition on deletion, but as a condition on nonprojection of semantic arguments. If a semantic argument is not projected as a syntactic argument, its content must be recoverable and, as with the 'old' Recoverability Condition, there are two ways of satisfying this condition. First, the content of the argument may be recoverable because of the presence of an identical argument in the immediate context. Second, there may be nothing to recover, because the argument has arbitrary meaning. We follow Fagan (1988, 1992) and Booij (1992) in assuming that it is this second way of licensing nonprojection of an argument that plays a crucial part in the derivation of English and Dutch middles. In general then, we assume that:¹⁰

(18) Argument projection from LCS to D-structure is optional

(19) *Recoverability Condition*

An A-marked nonprojecting semantic argument α must be

(a) discourse linked to a semantic argument identical to α

(b) ARB

Note that (18) is compatible with the Projection Principle. The lexical information that is represented at DS, SS and LF must be the same; syntactic

¹⁰ At the end of this section we will make a suggestion to the effect that (19b) may not be restrictive enough yet.

rules cannot add or delete lexical information. Moreover, it is still the case that d-structures are completely determined by lexical information. The only difference with the 'arguments project obligatorily' view is that a verb can occur in different d-structures, depending on the lexical information that projects.¹¹

The first major property of a middle, the 'suppression' of the logical subject, can now be analyzed very simply. Middle Formation (MF) is really (20). We will argue in the next sections that this definition enables us also to explain some of the other properties of the middle construction.

(20) MF: Actor = ARB

So, the 'suppression' of the external argument in a middle is a case of not projecting an ARB argument from LCS to DS. The Actor in a middle is present at the semantic level (LCS), but not at the syntactic level. This accounts for the fact that this argument is semantically implicit in middles, but not syntactically active (the same argument is made in Di Sciullo (1990: 283–284) for Italian middles). In this respect, English and Dutch middles differ from both inchoatives and passives. In inchoatives, an implicit argument is lacking even semantically. In passives, a syntactically active implicit argument is present. We believe the different properties of these constructions can be fruitfully analyzed by assuming a modular theory of grammar. When compared to their ordinary transitive counterparts, inchoatives must lack the external argument altogether, middles have it but do not project it in syntax, whereas in passives it is assigned syntactically. (Passives do not assign it to the subject, but for instance to the participial morphology, as proposed in Jaeggli (1986) and Baker, et al. (1989). This might also explain another striking difference between passives and middles in English and Dutch, namely the lack of special morphology in middles, as opposed to passives.)¹²

¹¹ This approach therefore deviates from rigid mapping principles like UTAH (Baker 1988: 46). Note, however, that if (18)–(19) are valid, it is not in any way harder for the language learner than it would be under UTAH to derive the correct d-structure from the meaning of a given utterance. In fact, if either UTAH or (18)–(19) are universally valid the language learner needs to learn nothing at all about the way arguments project at D-structure.

¹² If so, we expect that in a language where a middle construction is not morphologically marked it is derived presyntactically. We do not make any claims about languages that have middles that do show morphological marking (like Italian and Norwegian; Cinque (1988) argues that Italian middles are syntactic, but see Di Sciullo (1990) for a different view).

Although projection of semantic arguments in syntax is optional in principle, still, there seem to be verbs that lack the possibility of leaving an ARB argument unprojected. Consider for example (21). (The Dutch examples are exact translations of the English ones.)

- (21) (a) ?She knows. (d) *Ze weet.
 (b) ?She sees. (e) *Ze ziet.
 (c) *She fears. (f) *Ze vreest.
 (d) ?She understands. (g) *Ze begrijpt.

These sentences cannot mean 'she knows/sees/fears/understands some arbitrary thing' or they are downright ungrammatical; they cannot have an arbitrary object.¹³ Apparently, some arguments cannot be ARB. The correct empirical generalization seems to be (22).

- (22) Only an argument represented at the action tier can be a nonprojecting ARB

This generalization may be the result of the Recoverability Condition we gave in (19b) in fact not being strict enough. In (19b) we stated that an argument with specific content must be projected for its content to be recoverable, whereas ARB arguments are always recoverable. Now, suppose that even the content of an ARB argument is not recoverable if the argument is represented only once (at the thematic tier) at LCS. An argument that is represented at the action tier is also represented at the thematic tier, so it will be doubly represented at LCS. Generalization (22) might thus be a consequence of the fact that the content of such doubly represented arguments is more easily recoverable.

To conclude this section, we will briefly discuss two properties of middles that have not been mentioned so far. This is the fact that they often need some form of modification (manner adverbs, focus intonation or a modal, see Roberts 1987), and that they are individual level predicates. We want to propose that these two properties are related, and suggest a way to derive the individual level property from the way lcs's of middles are structured.

¹³ Some of the English examples are better because of readings that probably involve some kind of Topic-drop, which in Dutch is only possible when there is subject-verb inversion (so, *weet ik* 'know I' is ok); anyway, Topic-drop does not involve arbitrary arguments, but arguments whose content can be recovered from the context (cf. (19a)).

According to Carlson (1977), predicates can be of two kinds: individual level and stage level predicates. Individual level predicates express a permanent property of the subject, stage level predicates express a temporary property. Examples are:

(23a) John is a doctor. (individual level)

(23b) John has a hangover. (stage level)

Kratzer (1989) analyzes this difference as a difference in argument structure. Only stage level predicates have a so-called e-role (event-role, see Davidson 1967) as part of their argument structure.

All middles are individual level predicates, they express a permanent property of their grammatical subject, i.e. they do not have an e-role. It follows that one of the consequences of middle formation is that the verb loses its e-role. This phenomenon can be linked to our analysis of middle formation, if the presence or absence of an e-role depends on the properties of the predicate's lcs. We would like to propose the following:

(24) A verb has a syntactic e-role iff it has a fully specified Action tier

So, firstly, only verbs that have an Action tier at all can have a syntactic e-role. Secondly, the requirement of 'full specification' on this Action tier entails that if a predicate has an argument that is underspecified, i.e. if it contains ARB, it does not trigger an e-role. Consequently, if either an Actor or a Patient is filled by ARB at LCS the predicate will always be an individual level predicate.¹⁴

The often observed fact that middles seem to require some sort of additional modification can be directly related to the fact that they are individual level predicates. In principle, all that is required for a middle to be acceptable is an appropriate context. For instance, (25), is fine if it is uttered in a context where properties of bureaucrats are being discussed.

(25) This bureaucrat bribes.

¹⁴ The effect of substituting ARB for either an Actor or a Patient differs. The presence of an ARB Actor induces a generic interpretation (i.e. the ARB element is in the scope of a universal quantifier), an ARB Patient induces an habitual interpretation (i.e. the ARB element is in the scope of an existential quantifier). We do not have an explanation for this difference.

Out of context, the individual level interpretation is much easier to get with the right kind of modification. In any case, adverbial modification cannot be crucial to the grammatical analysis of middles (see also Hale and Keyser 1986: 14, Fagan 1988: 201, Di Sciullo 1990: 283).

5. The promotion of the logical object

If the middle verb's grammatical subject (its logical object) is also its D-structure subject, i.e. if no NP-movement takes place in syntax in middles, the fact that the logical object can become the middle verb's grammatical subject remains to be accounted for.

As noted by Hoekstra and Roberts (1990: 12–13), a lexical rule like Externalize (X), where X is some designated argument-type, cannot account for the facts. This is because different types of argument can be affected by MF, for instance Themes, Locations or Experiencers, cf. (26).

- (26a) Hay loads easily.
- (26b) This truck loads easily.
- (26c) Children scare easily.

Furthermore, Dutch impersonal and adjunct middles as in (1) show that sometimes an element that is not a bona fide argument becomes the subject (see section 8).

These problems arise only if a conception of external argument is used where a designated argument is marked as projecting externally. Therefore, as noted above, we adopt the alternative view that the property of projecting an argument externally is a property of the verb's lcs as a whole. No argument will be inherently marked as external; if an lcs (and therefore its corresponding a-structure) is specified as assigning one of its arguments externally, the particular argument in a-structure that is highest on the thematic hierarchy will be the external argument, cf. Jackendoff (1990a), Grimshaw (1990).

What we want to propose is that the [+ext] marking of an lcs does not depend in any way on which arguments of this lcs actually project in syntax. It is independent of the number and types of the verb's semantic arguments that are actually represented in a-structure. Therefore, we propose the 'Law of External Argument Preservation' (LEAP), expressed informally in (27).

(27) The property [+ext] cannot be erased during a derivation

The LEAP accounts for the promotion of the logical object in middles. Consider for example a verb like *kill*. If none of its two arguments are marked ARB, it will have the a-structure in (16), repeated here as (28).

$$(28) (\theta_{\text{Actor}} (\theta_{\text{Patient}}))^{+\text{ext}}$$

Because the Actor is highest on the thematic hierarchy, it will project externally at DS. When applying MF (the rule in (20)) to this verb the ARB Actor will not project, only the Patient will. But according to (27) this does not influence the [+ext] marking. As a result, we get the following a-structure.

$$(29) (\theta_{\text{Patient}})^{+\text{ext}}$$

Here, the Patient is the Θ -role that is highest on the thematic hierarchy out of those arguments represented in a-structure (only one in this case), and so it will project as the verb's external argument at DS.

This analysis does not have the problems of accounts that depend on the promotion of a particular kind of argument, Theme for instance. It accounts for the cases in (26), where other arguments than Theme are promoted. As noted before, Jackendoff's model makes it possible to split an argument's thematic role from its role in the affectedness relation expressed by the verb. Although the objects in (26) bear different roles at the thematic tier (Experiencer, Location and Theme respectively), they bear the same role at the action tier: they are all Patients. (Compare 'what X did to the children was scare them'; 'what X did to the truck was load it', etc.). This means that they are next-highest to the Actor in the hierarchy expressed by (14) so that, if the Actor is not projected, they will automatically become the external argument (as there must be an external argument according to (27)).¹⁵

¹⁵ We also found marginal cases where unaccusatives allow middle formation, which is unexpected in our analysis, as in (i):

- (ia) ?een judomat valt beter dan een betonnen vloer
a judo-mat falls better than a concrete floor
- (ib) ??een bejaardentehuis sterft rustiger dan het slagveld
an old people's home dies more-quietly than the battlefield
- (ic) Volle zalen komen lekker binnen
Full rooms enter nicely

6. The Affectedness Constraint

In this section we will discuss a condition on MF known in the literature as the Affectedness Constraint (AC) (cf. Anderson 1977, Jaeggli 1986). We will show that our analysis explains the existence of this constraint in middles. In fact, we will argue that the AC is not a constraint as such on the logical object/grammatical subject in a middle, but a close approximation to a descriptive generalization. The generalization is the result of the fact that in most cases, if the logical subject is an Actor the logical object will be a Patient. In other words, it is the role of the logical subject that will be shown to explain the AC, not the role of the logical object. We will see that this approach predicts some exceptions to the AC that turn out to be possible.

6.1. *Deriving the AC*

The AC as it is usually understood says that the grammatical subject of a middle must be an affected argument. Thus, middles of the state verbs in (30) are ungrammatical (both in Dutch and English).

- (30a) *Dit antwoord weet gemakkelijk.
this answer knows easily
- (30b) *Verre voorwerpen zien niet gemakkelijk.
distant objects see not easily
- (30c) *Grote honden vrezen nogal gauw.
big dogs fear rather quickly
- (30d) *Dit artikel begrijpt moeilijk.
this article understands hard

In our analysis this is a consequence of the fact that state verbs have no action tier. Verbs without an action tier do not have nonprojecting arbitrary arguments (see (22)), so they must project their direct objects (see (21)). Similarly, they do not have middles either, as there can be no ARB subject argument that they could leave unprojected.

The status of such examples is more or less the same as the jocular status of impersonal passives derived from unaccusatives (see Zaenen 1992). We have no account for this phenomenon.

We have defined MF as the nonprojection of an ARB Actor (in an lcs-marked [+ext]). If the Actor does not project, the argument that is next on the thematic hierarchy will be projected as the external argument. This will be the Patient, if there is one (see the hierarchy in (15)). By definition, the Patient is the second argument of the AFF function of the action tier; in other words, it is the affected argument.

Seen in this light, the AC turns out to be an empirical generalization covering the combined effects of the nature of MF and the way lcs's are structured. If a verb has no action tier containing a possibly arbitrary Actor, no middle can be formed. If, on the other hand, it does contain an action tier, the argument that is next to the ARB Actor on the thematic hierarchy (and therefore, the argument that becomes the middle verb's external argument) will usually be an affected argument, namely the Patient.

This analysis predicts certain exceptions to the AC. In particular, we predict a middle to be possible in cases where the verb has an action tier containing an Actor but no Patient, and a thematic tier containing other arguments besides the one corresponding to the Actor. In such cases, one of the non-Patient arguments is predicted to become external if the Actor is not projected. In the next subsection we will try to establish to what extent this prediction holds.

6.2. *Exceptions to the AC*

A clear example from Dutch of a verb with an Actor argument and a non-Patient second argument is the transitive variant of *lopen* 'to walk, run'. Consider the example in (31).

- (31) Arnold loopt de marathon van Rotterdam.
 Arnold runs the marathon of Rotterdam

Here, the subject clearly is an Actor ('what Arnold did was run the Rotterdam marathon'), while the object just as clearly is not a Patient (*'what happened to the Rotterdam marathon was that Arnold ran it'). So, the internal argument is a nonaffected argument in this case. Still, because there is an Actor, we predict MF to be possible here, in which case the nonaffected internal argument should become the external argument. This prediction is correct.¹⁶

¹⁶ Note that (32) is not an adjunct middle (and therefore can indeed only be the middle variant of transitive (31)), as *lopen* does not readily form adjunct middles with locational subjects, cf. *de

- (32) De marathon van Rotterdam loopt gemakkelijker dan die van
 the marathon of Rotterdam runs more-easily than that of
 Londen.
 London

In fact, we predict MF with any (transitive) verb with an Actor, whether or not there is a Patient. If there is no Patient, these middles will be violations of the traditional AC. For Dutch, this prediction seems to come out pretty well. There are not too many verbs with an action tier containing an Actor but not a Patient¹⁷ (hence the AC as a seemingly correct generalization about MF), but those that exist seem to allow for middle formation, even though sometimes only marginally.

- (33a) De Matterhorn beklimt gemakkelijker dan de Mt. Everest.
 the Matterhorn climbs more-easily than the Mt. Everest
 (33b) Lange vrachtwagens passeren niet gemakkelijk.
 long trucks pass not easily
 (33c) Dit boek leest als een trein.
 this book reads like a train
 'This book reads very easily.'
 (33d) ?Wilde dieren benaderen niet gemakkelijk.
 Wild animals approach not easily
 (33e) Dit artikel vertaalt niet gemakkelijk.
 this article translates not easily

These cases contrast sharply with middles of verbs that do not have an Actor as their logical subject as in (34).

- (34a) *Cadeautjes ontvangen lekker.
 presents receive nicely
 (34b) *Geld verliest gemakkelijk.
 money loses easily

Kalverstraat loopt niet gemakkelijk 'the Kalverstraat does not run easily'. A sentence like *Rotterdam loopt makkelijker dan New York* is indeed only grammatical in the reading where *Rotterdam* and *New York* are abbreviations for *de marathon van Rotterdam/New York* 'the Rotterdam/New York marathon' (or something similar), not when they are only used locationally. See section 8 for an analysis.

¹⁷ See the list in Jackendoff (1990a: 259–260).

- (34c) *Dit eiland bewoont prettig.
 this island inhabits comfortably
 (34d) *Pijn ondergaat niet gemakkelijk.
 pain undergoes not easily

So in fact there is no AC as such on MF, i.e. there is no constraint on the kind of object that can be promoted in principle. The fact that they usually are affected objects follows from the nature of MF (see (20)), the thematic hierarchy (in which Patient is next-highest to Actor) and the fact that verbs with an Actor usually have a Patient as well.

Additional evidence for this approach comes from Dutch impersonal middles. Some examples are given in (35) (see section 8 for details).

- (35a) Het loopt lekker op deze schoenen.
 it walks comfortably on these shoes
 (35b) Het zit lekker in deze stoel.
 it sits comfortably in this chair
 (35c) Het rijdt moeilijk met slecht zicht
 it drives difficult with poor sight

These examples constitute direct counterevidence to an absolute Affectedness Constraint on MF: the expletive in subject position is of course in no sense affected by the action. (Semantically, it is not an argument of the verb at all, though it is syntactically, cf. section 8.) However, our approach nonetheless predicts that only verbs with an action tier can form impersonal middles, as the nonprojected argument must be an arbitrary Actor. This prediction is borne out. Intransitive state verbs do not form impersonal middles in Dutch, witness (36).¹⁸

- (36a) *Het lijdt even makkelijk met veel geld.
 it suffers as easily with much money
 (36b) *Het stinkt gemakkelijk zonder je tanden te poetsen.
 it stinks easily without your teeth brushing

¹⁸ The verbs in (c) and (d), *stotteren* 'stutter' and *trekkebenen* 'limp', allow a reading both with and without an Actor. For instance, *Jan stottert* 'Jan stutters' can be a property of Jan (no Action tier), or something Jan is doing at this moment (possibly involving an Action tier). It is the first reading of these verbs that concerns us here.

- (36c) *Het stottert makkelijk op deze woorden.
 it stutters easily on these words.
 (36d) *Het trekkebeent makkelijk op slechte schoenen.
 it limps easily on bad shoes

This ungrammaticality cannot be due to the fact that the grammatical subject in (36) is not an affected argument, which can be clearly seen in (35) (and (32)–(33)). The difference in grammaticality between (35) and (36) therefore lends strong support to our approach to the AC, which holds that the nature of the unprojected argument (the logical subject) is crucial, not the nature of the grammatical subject (the logical object).

The type of exception to the AC that we expect is also found in English:

- | | |
|---|---|
| (37a) Greek translates easily. | (Keyser and Roeper 1984:
383 (8a)) |
| (37b) Messages transmit rapidly by satellite. | (ibid. (8c)) |
| (37c) This books reads poorly. | (Stroik 1992: 127 (1b)) |
| (37d) It will not analyze | (Mr. Chechov about a mysterious force field in Star Trek episode 'Catspaw') |

Again, these verbs have an Actor for their logical subject ('what John did was translate Greek', 'what John did was read this book', 'what Mr. Chechov did was analyze the force field'), but a non-Patient for their logical object (*'what happened to Greek was John translated it', *'what happened to the book was John read it', *'what happened to the force field was Mr. Chechov analyzed it'); as expected, they do form middles. A reviewer reports that the English versions of examples we gave for Dutch (cf. (33)) are bad:

- (38a) *Mountains climb easily for experienced mountaineers.
 (38b) *Little villages pass easily.
 (38c) *Wild animals do not approach easily.
 (38d) *Pubs enter only too easily for some people.

If (38a–d) are much worse than their Dutch counterparts, this may indicate that in English an even stricter condition on MF holds. For instance, we could assume that in English the condition holds that if a lexical operation adds an argument to an existing verb's argument structure, the original verb's

arguments must be projected.¹⁹ The difference between the impossible examples in (38) and the attested exceptions to the AC in (37) seems to be that the former, but not the latter, have intransitive counterparts. Assuming that the transitive variant is derived from the intransitive by adding a Goal argument, the condition entails that the Theme/Actor argument of *enter* must always project, also in the transitive variant. This is incompatible with MF as defined in (20). This discussion may well be spurious, however. Given an appropriate context, the verbs in (38) can undergo MF in English too, as (39) shows. (Thanks to Chris Wilder, p.c., for providing these data.)

- (39a) (prison architect:) This wall looks as if it would climb too easily.
Better put some barbed wire on top.
- (39b) (codriver to driver:) That next truck won't pass easily – it's pretty long and travelling very fast.
- (39c) This park doesn't enter easily – there's only one gate that is hidden behind some bushes.

Again, these cases contrast sharply with middles of verbs lacking an Actor argument, like *undergo*, *inhabit* and *receive*. It seems to us that these cannot possibly be salvaged by providing a plausible context (cf. **Utrecht inhabits nicely, with its lovely canals, wharfs and what have you*). All in all, our approach to the AC in middles seems to be fruitful; the exceptions we predict are possible, though in some cases it is pretty hard to think of a plausible context that is compatible with the generic semantics they have (cf. section 4).²⁰

¹⁹ Such a condition would also account for the behavior of causatives derived from inchoatives. In these cases, it would be the PATIENT that must be projected, since it is an argument of both the causative and the inchoative. It follows that derived causatives cannot leave their direct objects unprojected (despite the fact that these will be represented as Patients at the action tier, cf. (22)), as is indeed the case (John grows **(tomatoes)*).

²⁰ The AC has been argued to be operative in a number of other constructions as well, notably passive nominals and null objects. Our prediction is that if the condition is indeed the same as the one that can be observed in middles, we expect both these phenomena to have a comparable derivation. Crucially, we expect them to have a derivation that involves leaving an argument unprojected, which under the condition in (19b) means this can only occur with verbs that have an Action tier (or nouns that are derived from such verbs) (see the generalization in (22)). We have discussed the correlation that exists between verbs that do not allow empty objects and those that do not allow middle formation (cf. (21)).

7. A note on ditransitive verbs

In this section, we briefly discuss what happens if MF is applied to a verb that has two arguments apart from an Actor argument. The prediction is quite straightforward: if the Actor is ARB and does not project, the argument that is next highest on the thematic hierarchy will project as the external argument, whereas nothing special happens to the other argument.

Let us see what happens with ditransitive verbs. In the NP-PP variant, i.e. if the indirect object is expressed as a PP, things work out as expected. Consider for instance the verb *sell*.

(40) Mary sells a book (Theme) to Harry (Goal).

The NP argument will be higher on the thematic hierarchy than the PP argument, the Theme being higher than the Goal (whereas the PP argument is clearly not a Patient and therefore cannot be higher than the Theme). So here we expect the NP argument to be promoted under MF. This is correct:

(41a) These books don't sell to linguists. (Kayne 1982)

(41b) *Linguists don't sell books to easily.

Other examples more or less confirm this picture.

(42a) ?Long stories don't tell very easily to children. (cf. Everaert 1990)

(42b) ?Personal letters don't write easily to strangers.

(42c) ?Such furniture doesn't send easily to foreign countries.²¹

Middles formed from the NP-NP alternant, however, are always ungrammatical.

(43a) I sold the linguists the books.

(43b) *These books don't sell linguists.

(43c) *Linguists don't sell books.

²¹ The *to*-PP is probably not an argument of the verb in this particular example (see Jackendoff 1990: 197–200). For our argument, this is irrelevant. If the PP is not an argument, of course it cannot be a potential external argument of the middle verb. If it is an argument, it is lower on the thematic hierarchy than the NP argument is (see main text).

As a first explanation for this, we could adopt the view expressed by Larson (1988) and others, that the NP-NP alternant must be syntactically derived from the NP-PP alternant. This would mean that only the NP-PP variant can be projected directly from LCS. In other words, there are not two distinct lcs's that each project their own d-structure. If we are correct in assuming that MF is a presyntactic process, this means that MF can only apply to the basic NP-PP variant of double object verbs and not to the syntactically derived NP-NP variant.

Jackendoff (1990b), however, criticizes this approach to double object constructions and claims that the two alternants are both projected directly from lexical structure. In other words, there must be a distinct lcs underlying each alternative. More in particular, Jackendoff (1990a: §9.4) proposes that in an lcs underlying the NP-NP alternant ('give John a book') the Goal argument is also a Patient argument at the action tier. This is unlike the NP-PP alternant ('give a book to John'), where there is no Patient. So, Jackendoff gives an lcs for e.g. *give* that comprises the following two options (1990a: 267):²²

- (44a) [CAUSE ([α], [GO_{POSS} ([]_A, [TO []_A]])]
 [AFF ([]_A,)]
 (44b) [CAUSE ([α], [GO_{POSS} ([]_A, [TO [β]])]])
 [AFF ([]_A, []_B_A)]

If Jackendoff is right, the ungrammaticality of (43b–c) might still be explained, in a way similar to Grimshaw's (1990) explanation of the fact that psych-verbs of the *frighten* class do not have an external argument. Grimshaw (1990: 33) argues that in order for an argument to be eligible as an external argument, it must be the most prominent argument at all thematic dimensions. Transposing this to Jackendoff's model of LCS we have adopted, this means that an argument can only be projected externally if it is the most prominent argument at both the action tier (if there is an action tier) and the thematic tier.

At the thematic tier of the NP-NP variant of a double object verb (cf. (44b)) the Theme argument is more prominent than the Goal argument (see (15)). At the action tier, however, there is no argument corresponding to the

²² If an argument is represented both at the thematic and at the action tier this is indicated by coindexation with Greek letters. The argument at the action tier will project to D-structure, the argument at the thematic tier is bound by it and does not project independently (cf. fn. 8).

Theme, whereas the Goal is represented there as Patient. Therefore, at the action tier the Goal/Patient is the more prominent of the two. In a conception of ‘external argument’ where an element can be projected externally only if it is prominent at both tiers, this means that in a double object verb middle neither argument classifies as an external argument. This conflicts with the demand imposed by the LEAP, however, which states that if the Actor argument is not projected externally under MF, another argument must be. Middles of NP-NP double object constructions are out then because there must be an external argument, but neither argument qualifies as one.

So, under both a syntactic and a lexical analysis of the dative alternation, an explanation of the fact that middles of the NP-NP alternant are impossible can be provided.

8. Adjunct and impersonal middles

In this section, we want to extend our analysis of personal middles in Dutch and English to a phenomenon widely encountered in Dutch, namely impersonal and adjunct middles (cf. Kerstens 1983, Hoekstra and Roberts 1990). Examples are given in (45) (impersonal middles) and (46) (adjunct middles).

- (45a) Het zit lekker op deze stoel.
 it sits comfortably on this chair
 ‘It’s comfortable to sit on this chair, this chair is comfortable to sit on.’
- (45b) Het eet prettig aan deze tafel.
 it eats pleasantly at this table
- (45c) Het breit lekker met deze naalden.
 it knits easily with these knitting-needles
- (46a) Deze stoel zit lekker.
 this chair sits comfortably
 ‘This chair is comfortable to sit on.’
- (46b) Deze tafel eet prettig.
 this table eats pleasantly
- (46c) Deze naalden breien lekker.
 these knitting-needles knit nicely

In the impersonal middle the expletive *het* functions as the grammatical subject. In the adjunct middle an adjunct ends up as the subject of the verb. Both display the usual property-semantics encountered with personal middles. In both cases the verbs are unergatives just like ordinary personal middles, witness for instance the choice of auxiliaries in the perfect tense:

- (47a) Het heeft/*is altijd lekker gezeten op deze stoel.
 it has/is always comfortably sat on this chair
 (47b) Deze stoel heeft/*is altijd lekker gezeten.
 this chair has/is always comfortably sat

So, as in the case of personal middles, we assume no NP-movement is involved, which is why we want to account for these sentence types by the same mechanism we proposed for personal middles. In the remainder of this section we will show that projecting an impersonal or an adjunct middle is a device to 'save' an lcs with the feature [+ext] that has no argument that can project externally.

First, we will discuss impersonal middles. We want to propose that impersonal middles are derived like ordinary personal middles, i.e. they are derived by nonprojection of an ARB Actor. Consider an intransitive verb with an Actor as its only argument, like *voetballen* 'play soccer'. The result of MF will be an a-structure containing no argument at all, which is nevertheless marked [+ext] (according to (27)), as in (48).

- (48) ()^{+ext}

This a-structure specifies both that an external argument must be projected and that there is no argument to project. If nothing happens, these conflicting demands result in ungrammaticality (as in English). In Dutch, however, the structure can be saved by inserting the expletive *het* as the external argument, resulting in an impersonal middle like (49).²³

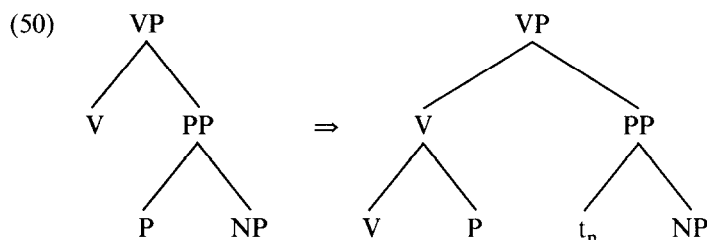
²³ In section 7 we suggested that a middle of a double object verb may be ungrammatical because none of the two arguments classifies as external. The reason why such a structure may not be 'rescued' by *het*-insertion is that *het* will always be the very lowest element in the thematic hierarchy, as it does not correspond to a semantic argument at all. This means that *het* as an expletive external argument can only be inserted if no argument is present at all in the verb's a-structure, as in (48).

- (49) Het voetbalt fijn met mooi weer.
 it footballs nicely with nice weather
 'It's nice to play football with nice weather.'

In other words, the expletive *het* functions as an argument syntactically (as it always does, see Bennis 1986), but not semantically (it is not present at LCS).

In an adjunct middle the same problematic a-structure seems to arise, resulting from an lcs marked [+ext] that has no projectable argument. Here, the strategy is to project some adjunct as the external argument. However, adjunct middles cannot be formed freely with just any adjunct, as apposed to impersonal middles which are formed freely. We are faced with the following problems: which adjuncts can be promoted, and how.

The problem is very similar to a problem encountered by Baker (1988) in his discussion of applicative constructions in various languages. Baker analyzes these constructions as incorporation of a preposition by its governing verb as in (50).



By this process the complement of the preposition turns into a direct object of the complex V. As the trace left by P must satisfy the ECP, the PP dominating it must not be a barrier. If it is an argument of the verb, it is not a barrier (as it is L-marked), but as an adjunct it is. Therefore, Baker predicts that P-incorporation is possible from argument PP's only. To check this prediction it is necessary to establish whether a PP is an argument or an adjunct. Baker argues that instrumental and some locative PP's²⁴ can actually be arguments. For English, this is argued for as follows.

²⁴ Also, some dative/benefactive PP's can be arguments. These only seem to occur in verbs taking more than one internal argument, on which see section 7. .

First, extraction from a *wh*-island of locative and instrumental PP's gives much better results than extraction of other PP's (Baker 1988: 243, (35)–(36)).²⁵

(51a) ?With which key do you always forget how to open doors?

(51b) *How do you always forget with which key to open doors?

(52a) ?In which chair do you know how to sit comfortably?

(52b) *How do you know in which chair to sit comfortably?

Extraction of locative/instrumental PP's only results in a (weak) subjacency violation, whereas extraction of true adjunct PP's gives rise to a (stronger) ECP violation.

Secondly, Baker adopts a test from Hornstein and Weinberg (1981: 88). This test involves P-stranding, which is possible only with locative/instrumental PP's. It allows one to distinguish between argument and adjunct locatives (see the distinction between (53b) and (53c)). As the contrast between (53c) and (54b) shows, it depends on the verb whether or not a particular locational PP is an argument.

(53a) I slept in my bed in New York.

(53b) Which bed did you sleep in (in New York)?

(53c) ?*Which city did you sleep (in your bed) in?

(54a) I lived in New York.

(54b) Which city do you live in?

Baker's prediction that only argumental PP's can participate in applicatives is borne out. In Kinyarwanda, for instance, applicative (P-incorporation) can apply to the expression 'sit on the table', but not to 'sit on the mountain' (Baker 1988: 245).

Strikingly, Dutch adjunct middles are sensitive to the same distinction. Only certain locative and instrumental PP's can become external arguments in a middle (in which case the P is not expressed, see below). Note that the impersonal counterparts of the ungrammatical examples are fine.

²⁵ In order to be really comparable, the (a) sentences should in fact be compared to sentences in which *in what way* is extracted instead of *how*, as extraction of less referential elements always seems to give worse results (cf. Rizzi 1990, Cinque 1990).

- (55a) Dit bed slaapt lekker.
this bed sleeps comfortably
- (55a') Het slaapt lekker in dit bed.
it sleeps comfortably in this bed
- (55b) ??New York slaapt lekker.
New York sleeps comfortably
- (55b') Het slaapt lekker in New York.
it sleeps comfortably in New York
- (56a) Dit papier schrijft lekker.
this paper writes well
- (56a') Het schrijft lekker op dit papier.
it writes well on this paper
- (56b) ??Deze lamp schrijft lekker.
this lamp writes well
- (56b') Het schrijft lekker bij deze lamp.
it writes well under this lamp
- (57a) Deze naalden breien lekker.
these needles knit pleasantly
- (57a') Het breit lekker met deze naalden.
it knits pleasantly with these needles
- (57b) ??Regen breit lekker.
rain knits well
- (57b') Het breit lekker met regen.
it knits well with rain

So, in Dutch, NP's from an argumental PP can become arguments of the verb under MF, while NP's from adjunct PP's cannot. This is very similar to what happens in applicative constructions. We therefore propose that adjunct middles are in fact the result of forming applicatives not syntactically (as in Kinyarwanda), but presyntactically. Let us explain this.

The difference between argument and adjunct PP's must be expressed at LCS. Normally, modification is expressed by adding a restrictive modifier to the thematic tier, as in (58):

- (58)
$$\left[\begin{array}{l} \text{SLEEP } [\text{Thing } \alpha]_A \\ \text{Event } [\text{Place IN } [\text{Thing NEW YORK}]] \\ [\text{AFF} ([]^a,)] \end{array} \right]$$

However, argumental PP's must be assumed to be A-marked elements, represented at the thematic tier, as in (59).

- (59) [_{Event}SLEEP ([_{Thing} α]_A, [_{Place} IN [_{Thing} BED]]_A)]
[AFF ([]^a,)]

If MF applies to an lcs that contains an ARB Actor and only a locative/instrumental argument, the latter will be the highest argument on the hierarchy to project. It should therefore project as the external argument (LEAP), but as a PP it cannot. PP's in general are impossible as grammatical subjects. In this situation Dutch allows function composition at LCS, as follows:

- (60) [_{Event} FUNCTION [_{Place/Instr} FUNCTION [_{Thing}]]] ⇒
[_{Event} FUNCTION o FUNCTION [_{Thing}]]

The result is that the [_{Thing}] is now a direct argument of a complex event function. This rule is the lexical counterpart of the applicative rule, which turns an 'oblique' argument of the verb into a direct argument of a complex verb.

As an illustration, let us apply MF and function composition to the example given in (59).

- (61) [_{Event} SLEEP ([_{Thing} α]_A, [_{Place} IN [_{Thing} BED]]_A)]
[AFF ([ARB]^a,)]
⇒
[_{Event} SLEEP o IN ([_{Thing} α]_A, [_{Thing} BED]_A)]
[AFF ([ARB]^a,)]

Application of this rule results in the presence of a [_{Thing}]-argument, which can project as an NP. It is therefore eligible for projection as an external argument. The result is the adjunct middle in (55a). Note that the NP subject, even though it is the projection of a [_{Thing}] argument, is still also interpreted as a location or instrument. This is the result of function composition, as the verb now expresses the combined semantics of 'sleep' and 'in'. A restrictive modifier at LCS (corresponding to an adjunct PP in syntax) cannot be input to the rule in (60), as it is not a function that is defined on the same domain as the function it should compose with, and therefore never gives rise to an adjunct middle. So, the grammatical subject in what seems to be an adjunct middle in Dutch must in fact be an LCS argument.

In the same way that not all languages allow syntactic applicatives, the rule of function composition in (60) seems to be available to some languages only. We have no explanation for its apparent absence in English.

To conclude this section, let us recapitulate the main results. Both impersonal and adjunct middles are the result of the requirement to project an external argument and the absence of an argument in the lcs that can be one. This situation arises either if no argument is left if an ARB Actor does not project, or if the only argument that is left canonically projects as a PP. In the latter case a rule of function composition can be applied that is the semantic counterpart of syntactic P-incorporation (applicative). We have shown that this rule is restricted to argumental PP's, which means that Dutch in fact does not have true adjunct middles.

9. Conclusion

Some syntactic analyses of middles are inspired by the idea that such analyses have the conceptual advantage of simplifying the grammar. No extra lexical principles and mapping principles that relate the lexical level of representation to the syntactic level of representation would be necessary. In response, it can be noted that the question whether middles are to be derived syntactically or (partially) presyntactically is an empirical issue, and that the facts seem to favor a presyntactic approach.

However, we also think that such a presyntactic account can be given without really complicating the grammar. A syntactic account would only yield a simpler grammar if the syntax itself would not have to be complicated in order to make the analysis possible. Introducing extra syntactic machinery in order to account for the middle construction is as costly as defining this kind of phenomenon on a separate semantic level. The machinery we need in a lexical account is a rule to map semantics to syntax that involves a thematic hierarchy. Even an approach that derives middles in syntax will need a rule like 'project a verb's arguments'. All that needs to be added to that is '... unless they are semantically ARB'. A thematic hierarchy is also necessary in any account to get the DS's right (cf. principles like Baker's UTAH (1988: 46)).

Concluding, in conceptual terms a presyntactic approach is as good as a syntactic one. Furthermore, a presyntactic approach allows a straightforward analysis of the phenomenon described as the Affectedness Constraint, and it can handle nonpersonal middles just as well as a syntactic account. In the

face of the empirical evidence against a purely syntactic approach (cf. Ackema and Schoorlemmer 1993) we conclude that a presyntactic analysis of the middle construction in English and Dutch is to be preferred.

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